



CALENVIROSCREEN: A TOOL FOR EVALUATING CALIFORNIA COMMUNITIES

APRIL 7, 2015

Office of Environmental Health Hazard Assessment



WHAT IS CALENVIROSCREEN?

CALIFORNIA COMMUNITIES ENVIRONMENTAL HEALTH SCREENING TOOL, VERSION 2.0 (CALENVIROSCREEN 2.0)

GUIDANCE AND SCREENING TOOL



October 2014

Matthew Rodriguez, Secretary
California Environmental Protection Agency

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- Screening tool to identify California communities that are disproportionately burdened by multiple sources of pollution and vulnerability
- Uses 19 indicators of environmental, health, and socioeconomic conditions
- Version 2.0 is most recent

PROJECT ORIGINS IN ENVIRONMENTAL JUSTICE LAWS

- Statutory definition of EJ
 - “Environmental justice means the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation and enforcement of environmental laws, regulations, and policies.”

Gov. Code §65040.12(e)

- CalEPA’s responsibilities
 - “...identify and address any gaps in existing environmental programs, policies, or activities that may impede the achievement of environmental justice.”
 - Required development of interagency environmental justice strategy for CalEPA
 - Interagency Working Group on Environmental Justice
 - California Environmental Justice Advisory Committee

Public Resources Code §71113



FOCUS OF CALENVIROSCREEN

“...**exposures, public health or environmental effects** from the combined emissions and discharges in a geographic area, including environmental pollution from all sources, whether single or multi-media, routinely, accidentally, or otherwise released. Impacts will take into account **sensitive populations** and **socioeconomic factors**, where applicable and to the extent data are available.”

-- definition of “cumulative impacts” by Cal/EPA Interagency Working Group on Environmental Justice

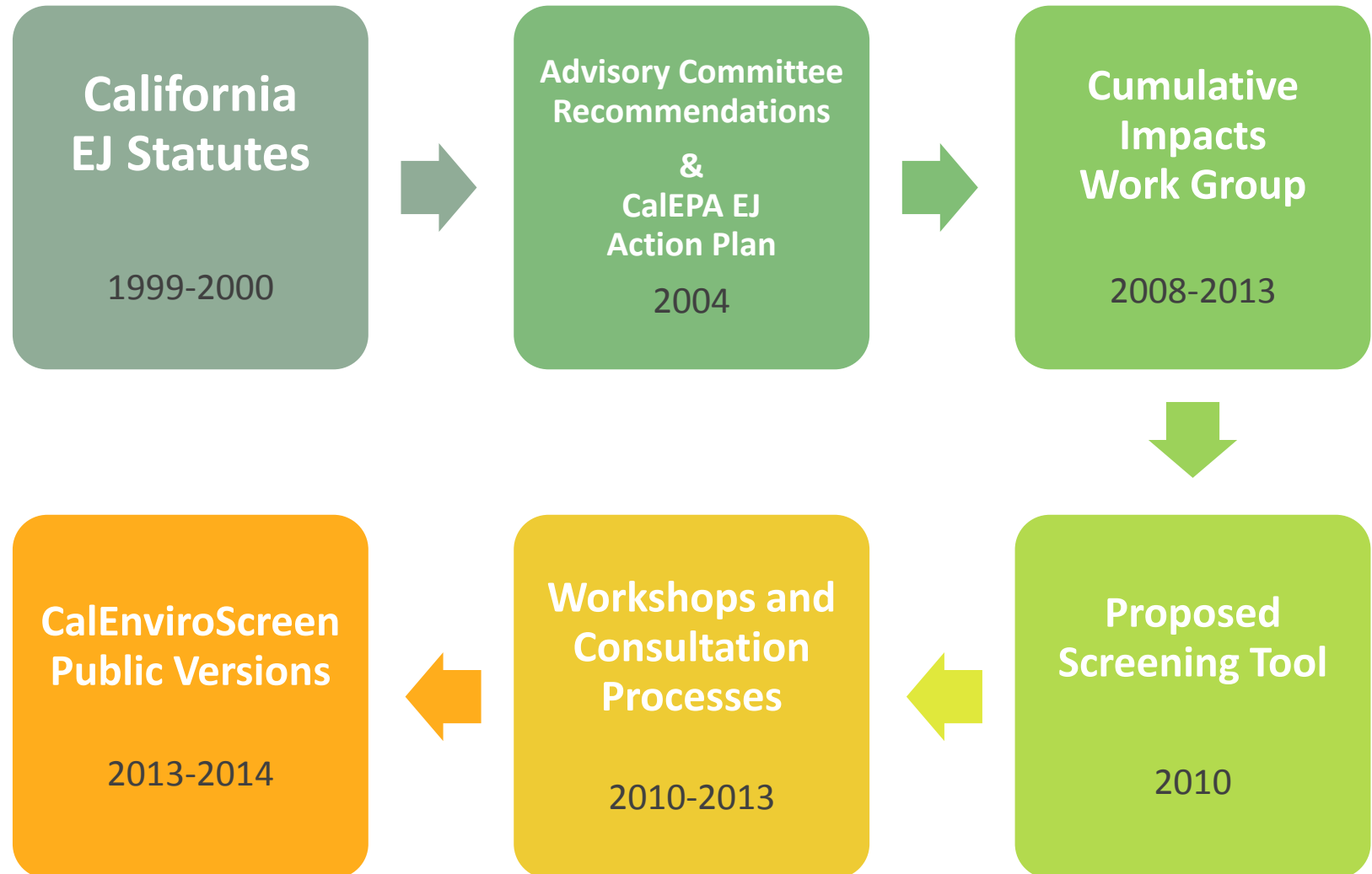


BASIS FOR ENVIRONMENTAL JUSTICE CONCERNS

- Numerous studies have shown that multiple pollution sources are disproportionately concentrated in low-income communities with high-minority populations.
- Studies have reported communities with certain socioeconomic factors (i.e. low-income, low-education) have increased sensitivity to pollution.
- Combination of multiple pollutants and increased sensitivity in these communities can result in higher cumulative pollution impacts.
- Issues reviewed in 2010 OEHHA Report:
 - California Environmental Protection Agency, Office of Environmental Health Hazard Assessment. “Cumulative Impacts: Building a Scientific Foundation”, (2010)
<http://oehha.ca.gov/ej/pdf/CIReport123110.pdf>



DEVELOPMENT OF CALENVIROSCREEN



FEATURES OF SCREENING TOOL

- Relatively simple
- Combines information from multiple media
 - Air, water, soil
- Data represent multiple factors
 - Exposures, environmental conditions, population sensitivity, health conditions, and socioeconomic factors
- Provides information at roughly community scale
 - Geography based
- Allows for comparison between geographic areas



POLLUTION BURDEN & POPULATION CHARACTERISTICS

Exposures

Contact with pollution

Environmental Effects

Adverse environmental conditions caused by pollutants

Sensitive Populations

Populations with biological traits (including health status) that may magnify the effects of pollutant exposures

Socioeconomic Factors

Community characteristics that result in increased vulnerability to pollutants

CRITERIA FOR INDICATOR SELECTION

- Contributes to understanding each component
 - Widespread environmental concerns
 - Population characteristics that may influence vulnerability to pollution
- Publicly available
- Location-based
- Good quality
 - e.g., covers the state, accurate, current



POLLUTION BURDEN INDICATORS

Exposures	Environmental Effects
PM2.5 concentrations <i>Annual mean concentration of PM2.5 over three years (2009-2011)</i>	Cleanup sites <i>Sum of weighted 'EnviroStor' cleanup sites</i>
Ozone concentrations <i>Amount of the daily maximum 8-hour ozone concentration over the California 8-hour standard (0.070 ppm) over three years (2009-2011)</i>	Groundwater threats <i>Sum of weighted 'Geotracker' sites (Leaking underground tanks and cleanups)</i>
Diesel PM emissions <i>Diesel PM emissions from on-road and non-road sources for a 2010 summer day in July (kg/day)</i>	Hazardous waste facilities and generators <i>Sum of weighted permitted facilities and large quantity generators</i>
Drinking water contaminants <i>Drinking water contaminant index for selected contaminants</i>	Impaired water bodies <i>Summed number of pollutants from water bodies designated as impaired</i>
Pesticide use <i>Pounds of selected active pesticide ingredients used in production-agriculture per square mile</i>	Solid waste sites and facilities <i>Sum of weighted solid waste facilities and sites</i>
Toxic releases from facilities <i>Toxicity-weighted concentrations of modeled chemical releases to air from facilities</i>	
Traffic density <i>Vehicle-kilometers per hour divided by total road length (kilometers) within 150 meters of the census tract boundary</i>	



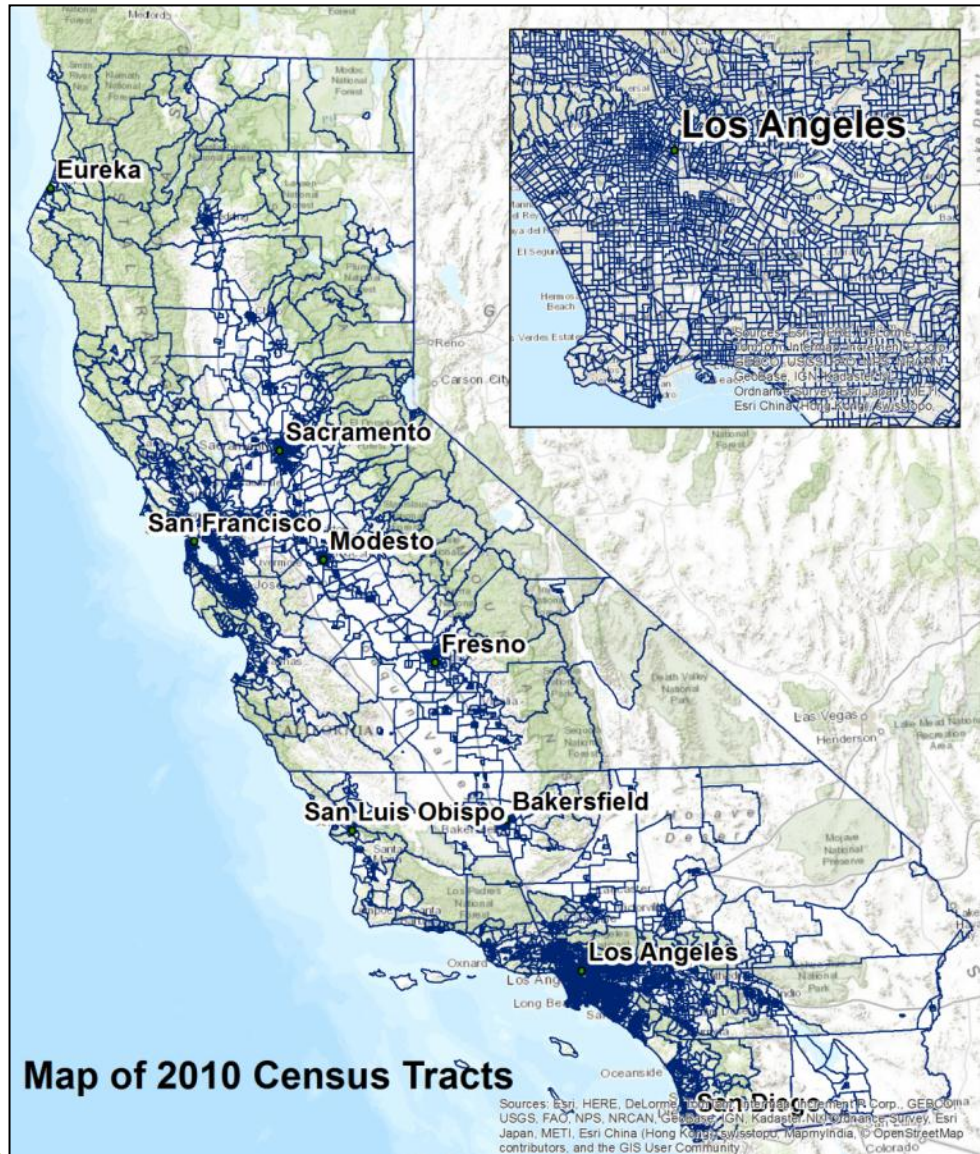
POPULATION CHARACTERISTICS INDICATORS

Sensitive Populations	Socioeconomic Factors
Age: children and elderly <i>Percent of population under age 10 or over age 65</i>	Educational attainment <i>Percent of the population over age 25 with less than a high school education</i>
Asthma emergency department visit rate <i>Age-adjusted rate of emergency department (ED) visits for asthma per 10,000, spatially modeled (2007-2009)</i>	Linguistic isolation <i>Percentage of households in which no one age 14 and over speaks English "very well" or speaks English only</i>
Low birth weight rates <i>Percent low birth weight infants under 2500 grams, spatially modeled (2006-2009)</i>	Poverty <i>Percent residents below twice the federal poverty level</i>
	Unemployment <i>Population over age 16 that is unemployed and eligible for the labor force</i>

Note: Race or ethnicity is not a CalEnviroScreen indicator, but the racial and ethnic composition of all census tracts are provided in the web maps and spreadsheet.



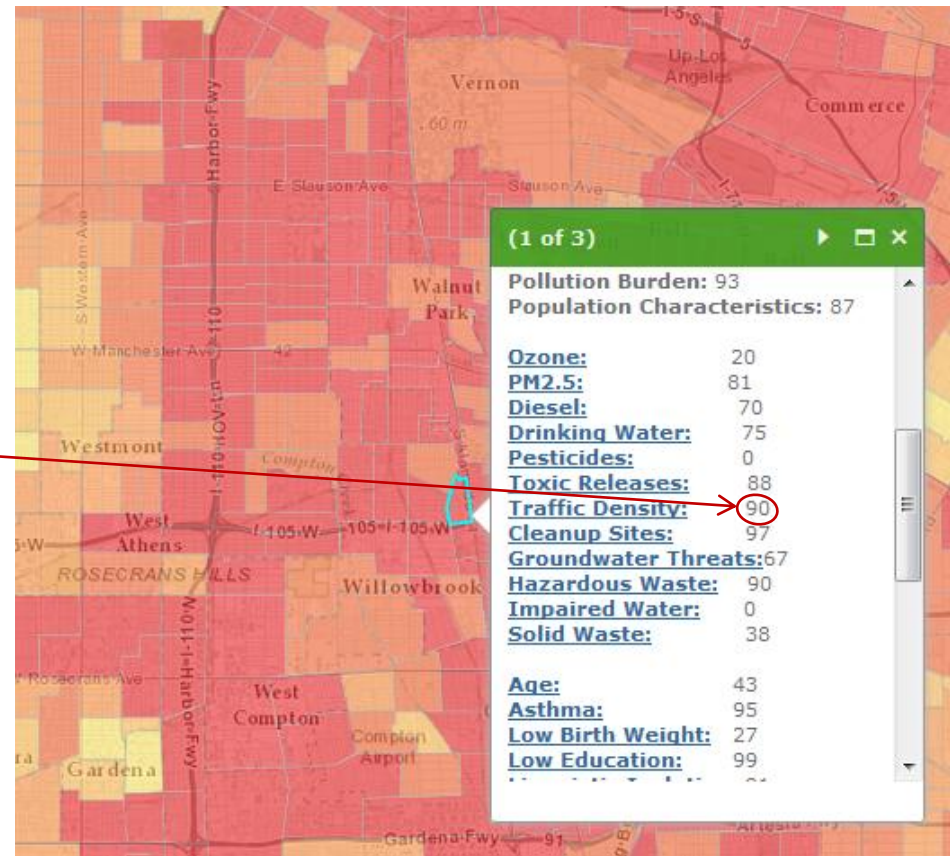
CENSUS TRACTS USED TO REPRESENT COMMUNITIES



- 2010 Census Tracts
- Represent relatively fine scale
- ~8,000 census tracts in California
- ~4,000 people per tract (range 1,200 -8,000)
- Commonly used

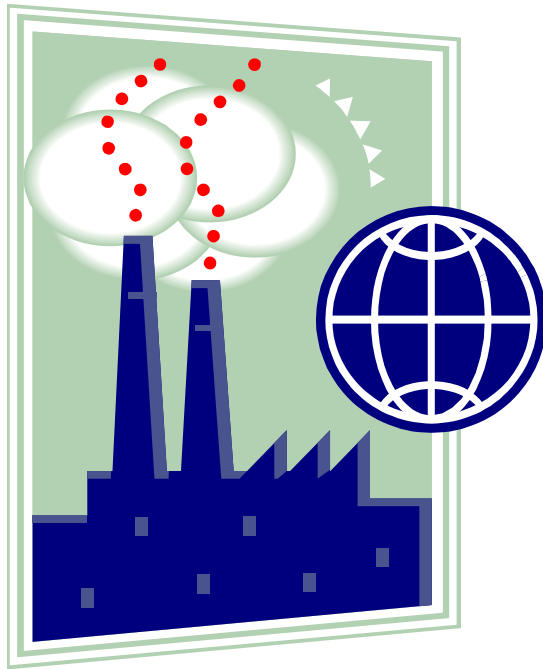
INDICATOR SCORING

- For each indicator, all census tracts are scored using percentiles:
 - For example, this Los Angeles census tract has a 90th percentile traffic density, meaning it's higher than 90% of all other census tracts in California.
- The percentile represents a relative score for all 19 indicators



EXAMPLE:

TOXIC RELEASES FROM FACILITIES



Data source:

- U.S. Environmental Protection Agency
- Risk Screening Environmental Indicators

Raw data:

- Chemical emissions to air from large facilities reported to the Toxic Release Inventory program

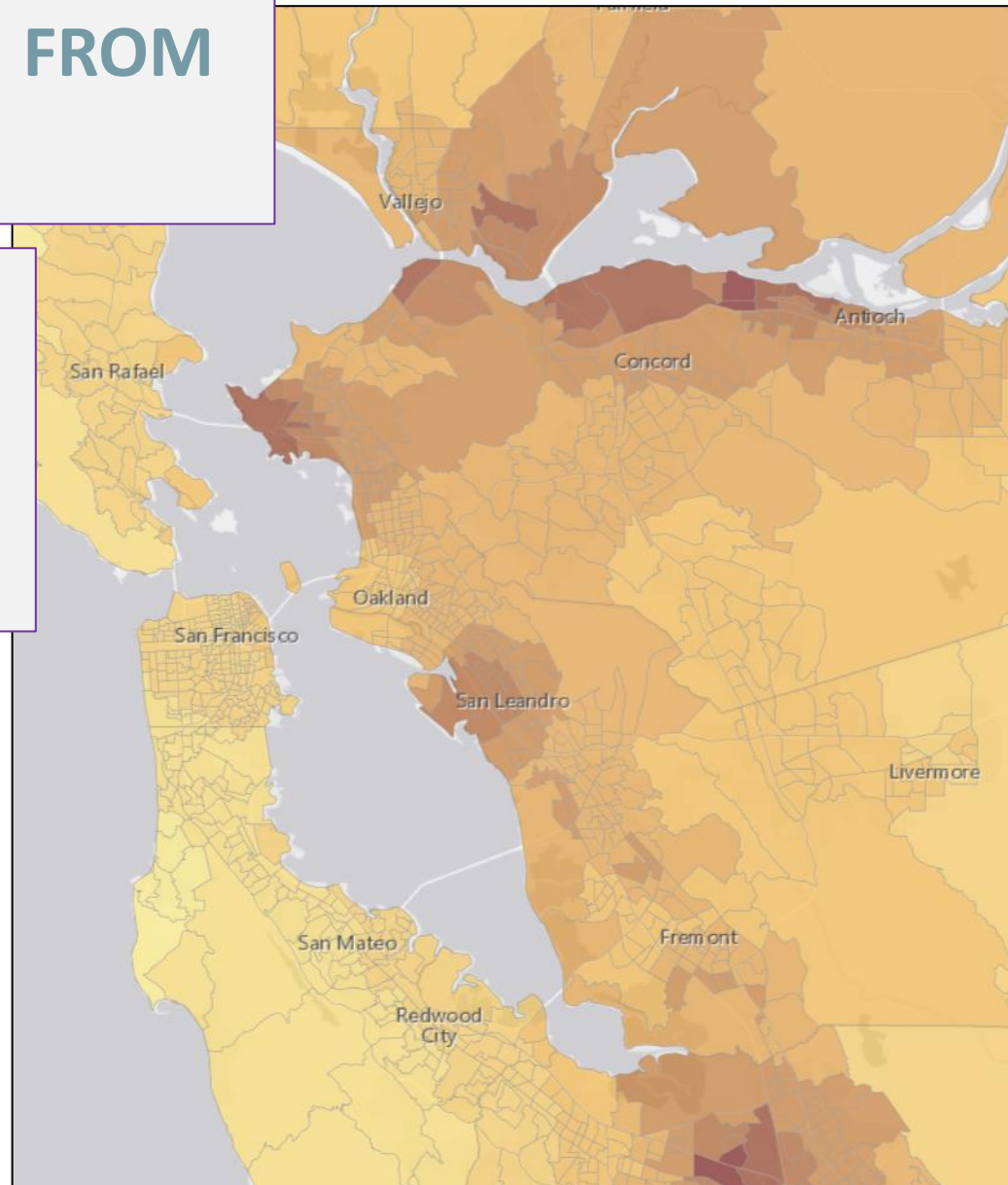
Indicator:

- Toxicity-weighted concentrations of modeled chemical releases to air from facility emissions and off-site incineration.

TOXIC RELEASES FROM FACILITIES

SAN FRANCISCO BAY AREA

Toxicity-weighted concentrations of modeled chemical releases to air from facilities



EXAMPLE:

ASTHMA EMERGENCY DEPARTMENT VISITS



Data source:

- California Office of Statewide Health Planning and Development (OSHPD)
- California Environmental Health Tracking Program (CEHTP)

Raw data:

- Emergency department visits to reporting facilities

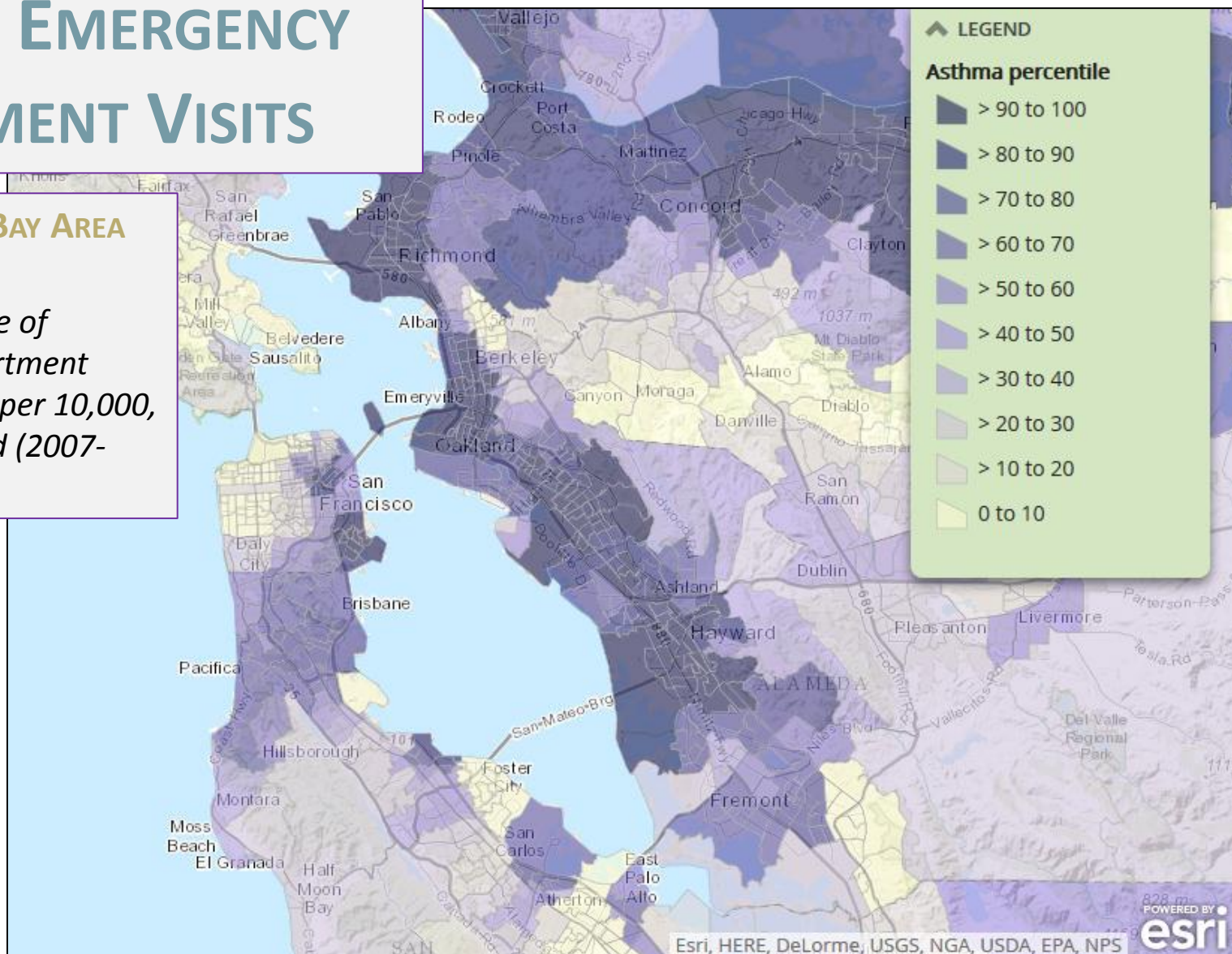
Indicator:

- Age-adjusted rate of emergency department visits for asthma per 10,000, spatially modeled (2007-2009)

ASTHMA EMERGENCY DEPARTMENT VISITS

SAN FRANCISCO BAY AREA

*Age-adjusted rate of
emergency department
visits for asthma per 10,000,
spatially modeled (2007-
2009)*



EXAMPLE:

EDUCATIONAL ATTAINMENT



Data source:

- U.S. Census Bureau's American Community Survey (ACS)

Indicator:

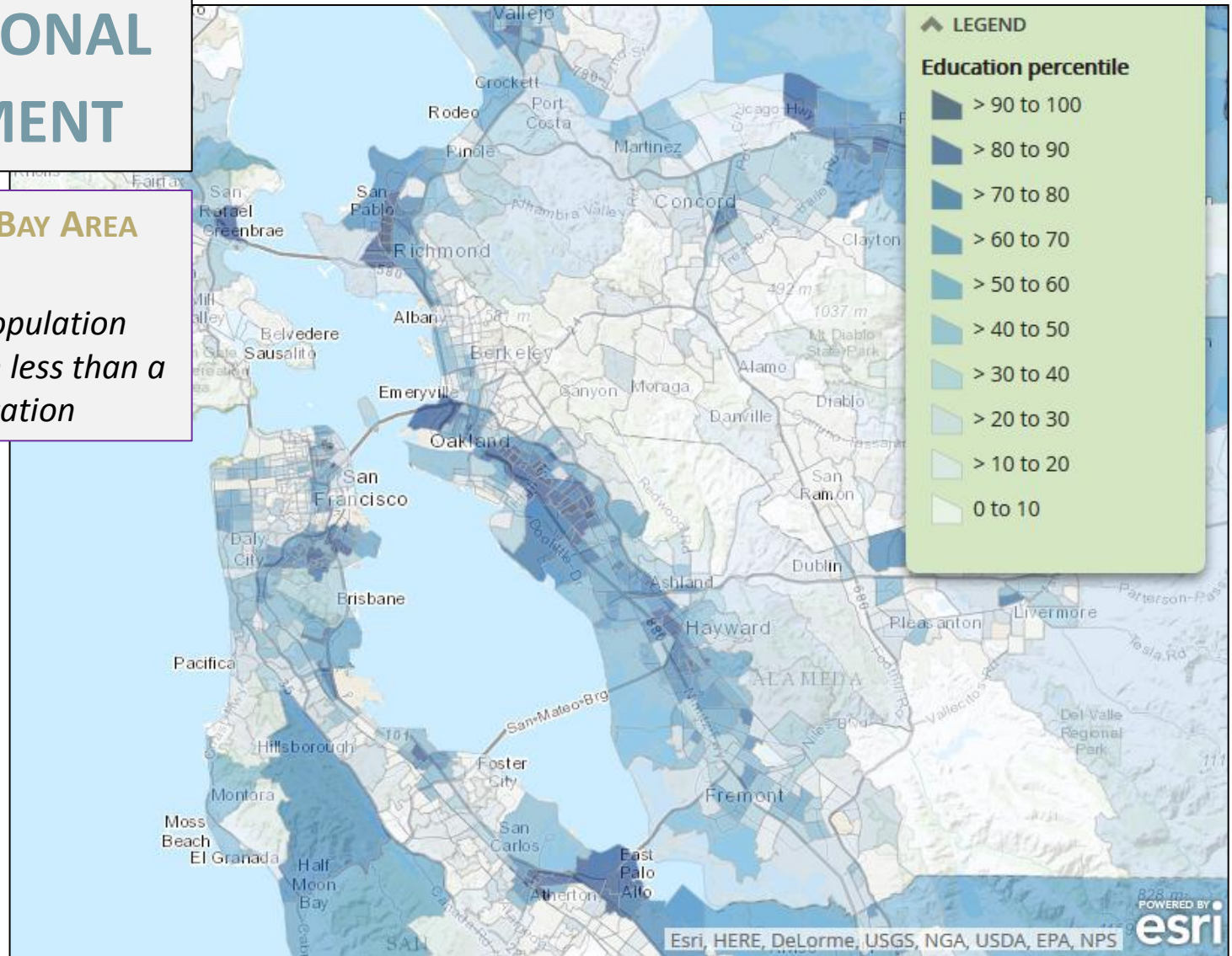
- Percent of the population over age 25 with less than a high school education



EDUCATIONAL ATTAINMENT

SAN FRANCISCO BAY AREA

*Percent of the population
over age 25 with less than a
high school education*



HOW THE CALENVIROSCREEN SCORE IS CALCULATED

- CalEnviroScreen score is calculated by combining all indicator scores which allow for comparison of different areas
- Higher scores mean greater pollution burdens and population vulnerability.
- The highest 75-100th percentile (top 25%) represent “disadvantaged communities” under SB 535.



CALENVIROSCREEN 2.0 RESULTS

RESULTS—ONLINE TOOL

A interactive map from OEHHA.

CalEnviroScreen 2.0

CalEnviroScreen 2.0 scores

This map shows the CalEnviroScreen 2.0 score for each census tract in California. The scores are calculated by combining the scores for 19 individual indicators that make up CalEnviroScreen. These indicators relate to pollution exposures, environmental conditions, and population characteristics.

The indicators and methodology for combining the scores are described in detail in the [CalEnviroScreen report](#). Results are also available as an Excel spreadsheet, Google Earth file, and ArcGIS geodatabase.

To explore the map, zoom to or type a location into the search bar. Clicking on a census tract shows a popup window with the individual results for each of the 19 indicators that make up its CalEnviroScreen score.

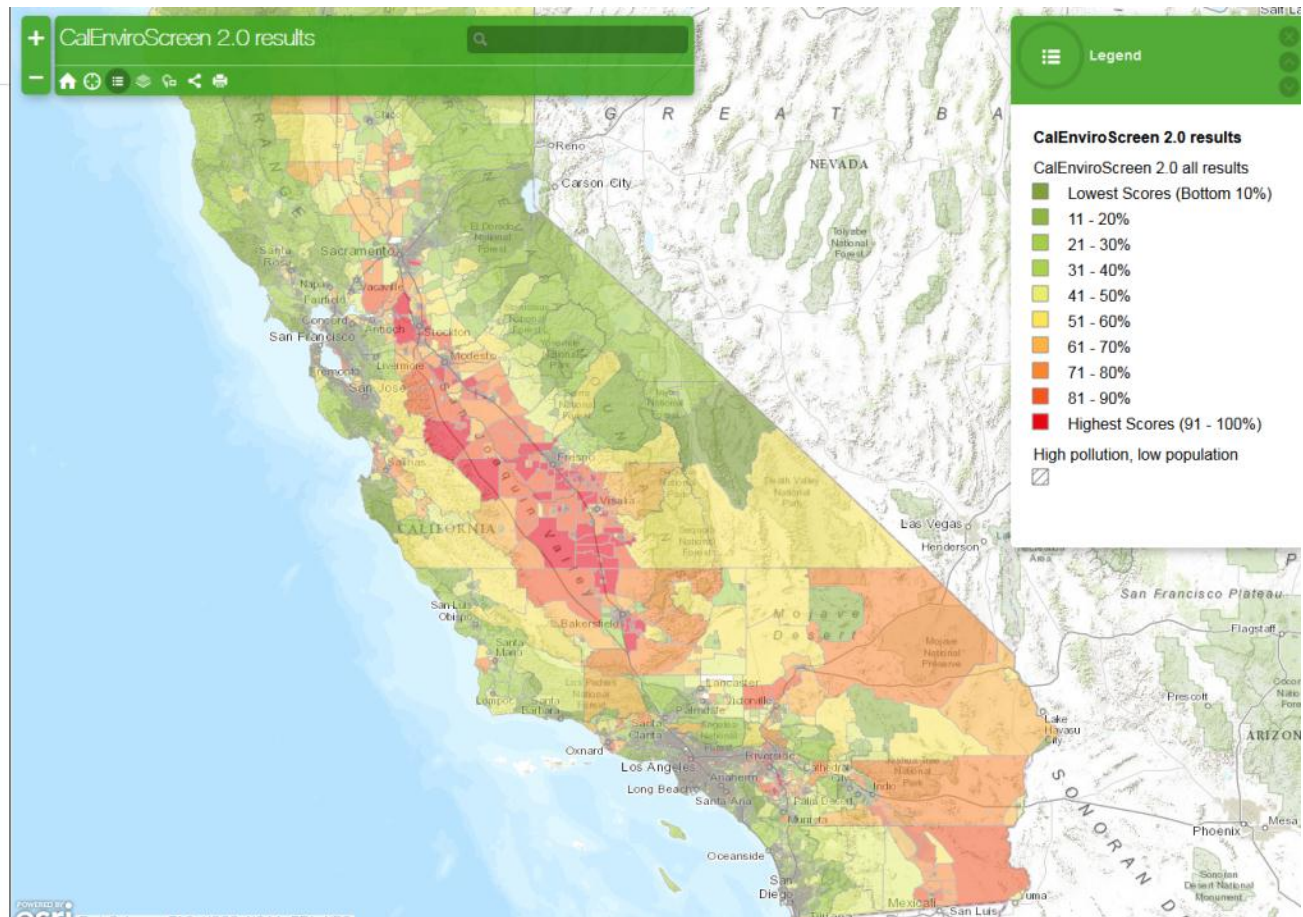
Map tools available here include finding your current location, viewing the legend, changing base maps, viewing a regional overview map, getting details, sharing the map with someone else, and printing the mapped area.

CalEnviroScreen 2.0

Pollution Burden Scores

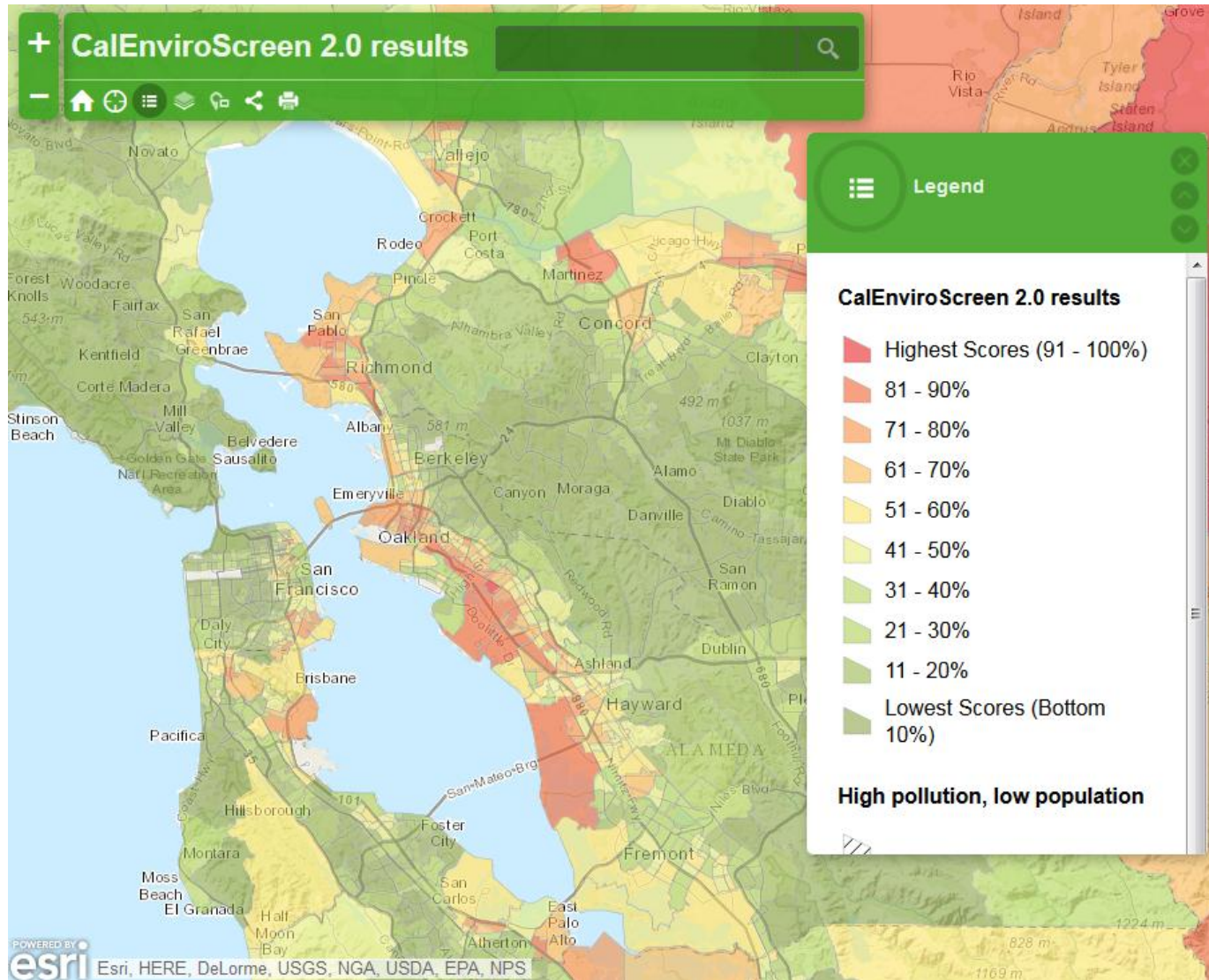
Overall CalEnviroScreen scores are calculated from the scores for two broad groups of indicators: Pollution Burden and Population Characteristics. This map shows *only* the combined Pollution Burden scores. The 12 indicators that make up the Pollution Burden are:

- Air Quality: Ozone
- Air Quality: Fine Particles (PM2.5)
- Diesel Particulate Emissions
- Drinking Water Contaminants
- Pesticide Use
- Toxic Releases from Facilities
- Traffic Density
- Cleanup Sites



Available at: oehha.ca.gov/ej/ces2.html

CALENVIROSCREEN 2.0 RESULTS



San Francisco
Bay Area

How is CALENVIROSCREEN Used?

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GUIDANCE AND SCREENING TOOL



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- Guidance identifies potential use
- Grants
- Compliance and enforcement
- Sustainable development
- Communities and Local Government

GREENHOUSE GAS REDUCTION FUND



- Various state agencies
- Identifies disadvantaged communities
- At least 25% of funds must benefit disadvantaged communities
- Statute identifies environmental, socioeconomic, and public health criteria

SUSTAINABLE COMMUNITIES PLANNING GRANTS



Strategic Growth Council

At least 25% of funds set aside
for benefit disadvantaged
communities

ACTIVE TRANSPORTATION PROGRAM



- CA Transportation Commission
- At least 25% of funds must benefit disadvantaged communities

ADDITIONAL USES

- CalEPA Environmental Justice Small Grants
- Senate Bill 43
- CalEPA Environmental Justice Compliance and Enforcement Working Group
- Department of Toxic Substances Control enforcement (AB 1329)
- Supplemental Environmental Projects



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- Academic expert panel who provided comments at a workshop in September 2012
- Graduate students assisting in the project

THANK YOU!

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